# Worthwhile Operational Guidelines & Suggestions

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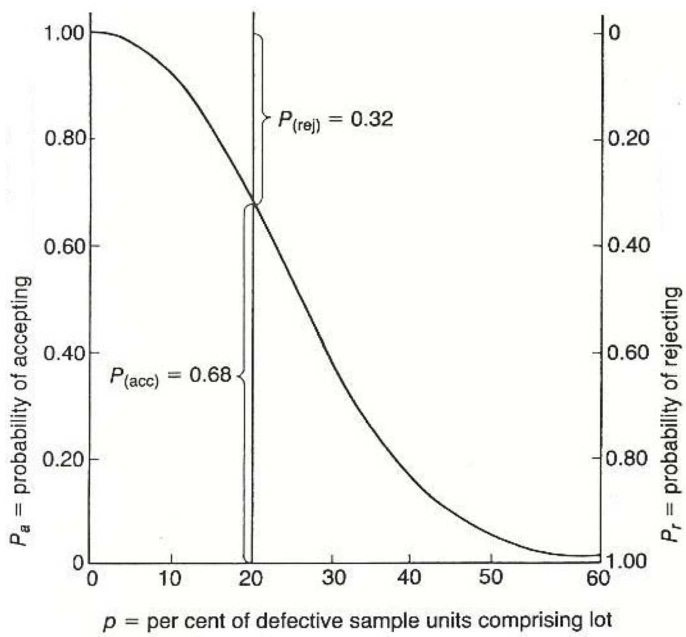
## THE OPERATING CHARACTERISTIC (OC) CURVE

Frequently, we are asked to sample lots of products and make acceptance/rejection, as it is not practical to analyze the entire lot. Then, how do we decide on a sampling plan or *n* (the number of randomly taken samples analyzed)? In general, by increasing *n*, we can reduce the risks of making wrong decisions. However, in practice, we must compromise between large sample units and small risks and *vice versa.* We must know what the probability of accepting a poor lot or rejecting a good lot? The OC curve allows us to weigh the probability (*Pa*) of acceptance and rejection (*Pr)* based on a given sampling plan.

The figure shown is an OC curve for a sampling plan of *n*=10 and *c*=2. Let's assume that we want to sample 10 birds in a lot of chickens (*n*=10) and reject if there are 2 salmonella positive birds (*c*=2). The sigmoidal curve clearly illustrates that as the proportion of defective (positive) sample units in a lot increases (horizontal axis), the chances of acceptance decreases (left vertical axis). Since the rejection limit (*c)* is set at 2 (or 20%), then the *Pa*=0.68. This means that a 20% positive lot would be accepted 68 out of 100 tests (or 68% of the time) and rejected 32 out of 100 tests (or 32%) of the time. The OC curve provides us with probabilities of accepting lots in relation to the proportion of positive sample units comprising the lots. There are OC curves for *n*=5, 10, 15, and 20. Of course, as the number of samples (*n*) tested increases, so does the level of stringency.

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